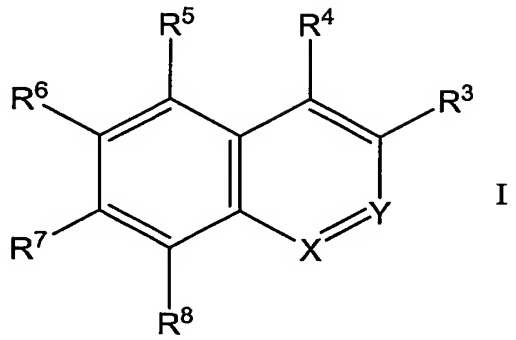
What is claimed:

1. A compound having the formula I



I

wherein X is O, S, CR^1, NR^2, or N;

wherein when Y is present, Y is CR^9 or N and X is CR^1 or N;

wherein when Y is not present, X is O, S, $C(R^1)_2$, or NR^2;

wherein R^1-R^9 are, independently, hydrogen, a branched or straight chain alkyl group, a hydroxyl group, an alkoxy group, a COOH group, a $B(OH)_2$ group, an alkyl substituted an amino group, a hydroxyalkyl group, an alkoxyalkyl group, an aminoalkyl group, a thiol group, a thiol ether group, an amide group, an aldehyde group, a ketone group, an ester, an arakyl group, an aryl group, a nitrile group, a nitro, a halogen, a sulfo-oxo group, a sulfo-amide group, a phosphonate group, or a phosphate;

wherein the compound having the formula I has at least one $B(OH)_2$ group directly or indirectly bonded to the ring;

or the salt thereof,

wherein the compound is not 1-naphthalenyl boronic acid; 2-naphthalenyl boronic acid; 6-dimethylamino-2-naphthalenyl boronic acid boronic acid; 6-amino-2-naphthalenyl boronic acid boronic acid; 8-quinolineboronic acid; benzo[b]thiophene-2-boronic acid; 2-(4-phenylboronic acid)-quinoline-4-carboxylic acid; N-Boc-4-amino-1-naphthalene boronic acid; 4-cyano-1-

naphthalenyl boronic acid; 6-((diphenylamino)-2-naphthalenyl) boronic acid; 5-bis-(phenylmethoxy)(ethyl)amino-2-naphthalenyl-boronic acid; 6-bis-(phenylmethoxy)(ethyl)amino-2-naphthalenyl-boronic acid; 6-((naphthalenylphenylamino)-2-naphthalenyl) boronic acid; 6-((1,1'-biphenyl-4-ylphenylamino)-2-naphthalenyl) boronic acid; 6-(2-naphthalenylphenylamino)-2-naphthalenyl) boronic acid; phenylmether ester of 4-borono-1-naphthalenyl carbamic acid; 6-cyano-1-naphthalenyl boronic acid; 4-(2,2-dimethyl-1-oxopropyl)amino-1-naphthalenyl boronic acid; 1-(diethylamino carbonyl)-2-naphthalenyl boronic acid; 4-(cyclopropylmethyl)propylamino-1-naphthalenyl boronic acid; 1-bis-(1-methylethyl)amino carbonyl)-2-naphthalenyl boronic acid; and 3-bis-(1-methylethyl)amino carbonyl)-4-methoxy-2-naphthalenyl boronic acid.

2. The compound of claim 1, wherein Y is CR^9.

3. The compound of claim 2, wherein X is CR^1.

4. The compound of claim 3, wherein R^1 is $B(OH)_2$.

5. The compound of claim 4, wherein at least one of R^3-R^9 is an alkyl substituted amino group.

6. The compound of claim 4, wherein R^4 is an alkyl substituted amino group.

7. The compound of claim 4, wherein R^4 is NMe_2.

8. The compound of claim 7, wherein R^3 and R^5-R^9 are hydrogen.

9. The compound of claim 4, wherein R^5 is an alkyl substituted amino group.

10. The compound of claim 4, wherein R^5 is NMe_2.

11. The compound of claim 10, wherein R^3, R^4, and R^6-R^9 are hydrogen.

12. The compound of claim 1, wherein Y is N and X is CR^1.

13. The compound of claim 12, wherein R^3 is $B(OH)_2$.

14. The compound of claim 13, wherein R^4-R^9 are hydrogen.

15. The compound of claim 12, wherein R^4 is $B(OH)_2$.

16. The compound of claim 15, wherein R^1, R^3, and R^5-R^8 are hydrogen.

17. The compound of claim 12, wherein R^5 is $B(OH)_2$.

18. The compound of claim 17, wherein R^3, R^4, and R^6-R^9 are hydrogen.

19. The compound of claim 12, wherein R^6 is $B(OH)_2$.

20. The compound of claim 19, wherein R^3-R^5 and R^7-R^9 are hydrogen.

21. The compound of claim 12, wherein R^7 is $B(OH)_2$.

22. The compound of claim 21, wherein R^3-R^6, R^8, and R^9 are hydrogen.

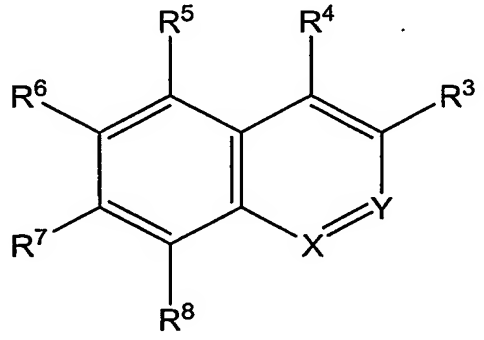
23. The compound of claim 12, wherein R^8 is $B(OH)_2$.

24. The compound in any of claims 1-23, wherein the compound has a solubility of greater than 1 μM in water.

25. The compound in any of claims 1-24, wherein the compound is the pharmaceutically acceptable salt or ester thereof.

26. A pharmaceutical composition comprising the compound in any of claims 1-25 and a pharmaceutically acceptable carrier.

27. A modified-macromolecule comprising a macromolecule having at least one compound having the formula II incorporated therein



II

wherein X is O, S, CR^1, NR^2, or N;

wherein when Y is present, Y is CR^9 or N and X is CR^1 or N;

wherein when Y is not present, X is O, S, $C(R^1)_2$, or NR^2;

wherein R^1-R^9 are, independently, hydrogen, a branched or straight chain alkyl group, a hydroxyl group, an alkoxy group, a COOH group, a $B(OH)_2$ group, an alkyl substituted amino group, an amino group, a hydroxyalkyl group, an alkoxyalkyl group, an aminoalkyl group, a thiol group, a thiol ether group, an amide group, an aldehyde group, a ketone group, an ester, an arakyl group, an aryl group, a nitrile group, a nitro, a halogen, a sulfo-oxo group, a sulfo-amide group, a phosphonate group, or a phosphate;

wherein the compound having the formula II has at least one $B(OH)_2$ group directly or indirectly bonded to the ring;

or the salt thereof.

28. The modified-macromolecule of claim 27, wherein the macromolecule comprises an oligonucleotide, a nucleic acid or a metabolically stabilized analogue thereof, a polypeptide, a lipid, a dendrimer, a polymer, a glycoprotein, lipopolysaccharide, or a pharmaceutically-acceptable compound.

29. The modified-macromolecule of claim 27, wherein Y is CR^9.

30. The modified-macromolecule of claim 29, wherein X is CR^1.

31. The modified-macromolecule of claim 30, wherein R^1 is $B(OH)_2$.

32. The modified-macromolecule of claim 31, wherein at least one of R^3-R^9 is an alkyl substituted amino group.

33. The modified-macromolecule of claim 31, wherein R^4 is an alkyl substituted amino group.

34. The modified-macromolecule of claim 31, wherein R^4 is NMe_2.

35. The modified-macromolecule of claim 34, wherein R^3 and R^5-R^9 are hydrogen.

36. The modified-macromolecule of claim 31, wherein R^5 is an alkyl substituted amino group.

37. The modified-macromolecule of claim 31, wherein R^5 is NMe_2.

38. The modified-macromolecule of claim 37, wherein R^3, R^4, and R^6-R^9 are hydrogen.

39. The modified-macromolecule of claim 31, wherein R^6 is an alkyl substituted amino group.

40. The modified-macromolecule of claim 31, wherein R^6 is NMe_2.

41. The modified-macromolecule of claim 40, wherein R^3-R^5 and R^7-R^9 are hydrogen.

42. The modified-macromolecule of claim 27, wherein Y is N and Y is CR^1.

43. The modified-macromolecule of claim 42, wherein R^3 is $B(OH)_2$.

44. The modified-macromolecule of claim 43, wherein R^4-R^9 are hydrogen.

45. The modified-macromolecule of claim 42, wherein R^4 is $B(OH)_2$.

46. The modified-macromolecule of claim 45, wherein R^1, R^3, and R^5-R^8 are hydrogen.

47. The modified-macromolecule of claim 42, wherein R^5 is $B(OH)_2$.

48. The modified-macromolecule of claim 47, wherein R^3, R^4, and R^6-R^9 are hydrogen.

49. The modified-macromolecule of claim 42, wherein R^6 is $B(OH)_2$.

50. The modified-macromolecule of claim 49, wherein R^3-R^5 and R^7-R^9 are hydrogen.

51. The modified-macromolecule of claim 42, wherein R^7 is $B(OH)_2$.

52. The modified-macromolecule of claim 51, wherein R^3-R^6, R^8, and R^9 are hydrogen.

53. The modified-macromolecule of claim 42, wherein R^8 is $B(OH)_2$.

54. The modified-macromolecule of claim 53, wherein R^3-R^7 and R^9 are hydrogen.

55. The modified-macromolecule of claim 42, wherein at least one R^3-R^9 group is COOH.

56. The modified-macromolecule of claim 55, wherein at least one R^3-R^9 group is Z-$B(OH)_2$, where Z is an aryl group.

57. The modified-macromolecule of claim 56, wherein Z is a substituted or unbsubstituted phenyl ring.

58. The modified-macromolecule of claim 42, wherein R^4 is COOH and R^1 is *p*-phenyl-$B(OH)_2$.

59. The modified-macromolecule of claim 58, wherein R^3 and R^5-R^9 are hydrogen.

60. The modified-macromolecule of claim 27, wherein Y is not present.

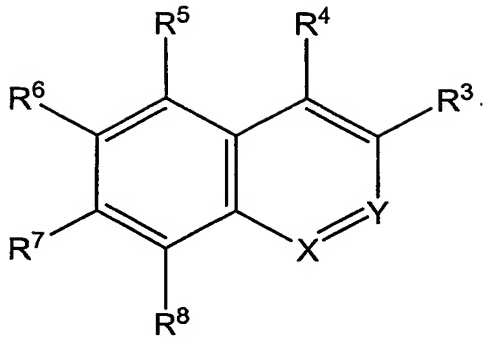
61. The modified-macromolecule of claim 60, wherein X is sulfur.

62. The modified-macromolecule of claim 61, wherein R^3 is $B(OH)_2$.

63. The modified-macromolecule of claim 61, wherein R^4-R^8 are hydrogen.

64. A method for detecting an analyte, comprising

(a) contacting the analyte with a compound having the formula II to produce a tagged analyte; and



II

wherein X is O, S, CR^1, NR^2, or N;

wherein when Y is present, Y is CR^9 or N and X is CR^1 or N;

wherein when Y is not present, X is O, S, $C(R^1)_2$, or NR^2;

wherein R^1-R^9 are, independently, hydrogen, a branched or straight chain alkyl group, a hydroxyl group, an alkoxy group, a COOH group, a $B(OH)_2$ group, an alkyl substituted amino group, an amino group, a hydroxyalkyl group, an alkoxyalkyl group, an aminoalkyl group, a thiol group, a thiol ether group, an amide group, an aldehyde group, a ketone group, an ester, an arakyl group, an aryl group, a nitrile group, a nitro, a halogen, a sulfo-oxo group, a sulfo-amide group, a phosphonate group, or a phosphate;

wherein the compound having the formula II has at least one $B(OH)_2$ group directly or indirectly bonded to the ring;

or the salt thereof; and

(b) detecting the fluorescent emission produced from the tagged analyte.

65. A method for detecting an analyte, comprising

(a) contacting the analyte with a modified-macromolecule in any of claims 27-63 to produce a tagged analyte; and

(b) detecting the fluorescent emission produced from the tagged analyte.

66. The method of claim 64 or 65, wherein the analyte comprises a natural or synthetic oligonucleotide, a natural or modified/blocked nucleotide/nucleoside, a nucleic acid (DNA) or (RNA), a peptide comprising natural or modified/blocked amino acid, an antibody, a parasite, a hapten, a biological ligand, a protein membrane, a lipid membrane, a small pharmaceutical molecule, a virus, a bacterium, or a cell.

67. The method of claim 64 or 65, wherein the analyte is a carbohydrate.

68. The method of claim 67, wherein the carbohydrate is fructose, galactose, glucose, mannose, arabinose, sorbitol, tagatose, lactose, fucose, sialyl Lewis X, sialyl Lewis a, Lewis Y, Lewis X, blood group antigens, or an oligosaccharide that is part of a glycoprotein, a glycolipid, a lipopolysaccharide, a stage specific antigen, or a cancer carbohydrate-containing biomarker.

69. The method of claim 64 or 65, wherein the analyte is detected *in vivo*.

70. The method of claim 64 or 65, wherein the analyte is detected *in vitro*.

71. The method of claim 64 or 65, wherein the analyte is blood sugar from a blood sample of a subject.

72. The method of claim 64 or 65, wherein the analyte is a glycoprotein.

73. The method of claim 72, wherein the glycoprotein is immobilized on a gel.

74. The method of claim 64 or 65, wherein the analyte is a lipposaccharide produced by bacteria.

75. The method of claim 64, wherein Y is CR^9.

76. The method of claim 75, wherein X is CR^1.

77. The method of claim 76, wherein R^1 is $B(OH)_2$.

78. The method of claim 77, wherein at least one of R^3-R^9 is an alkyl substituted amino group.

79. The method of claim 78, wherein R^4 is an alkyl substituted amino group.

80. The method of claim 78, wherein R^4 is NMe_2.

81. The method of claim 80, wherein R^3 and R^5-R^9 are hydrogen.

82. The modified-macromolecule of claim 78, wherein R^5 is an alkyl substituted amino group.

83. The method of claim 78, wherein R^5 is NMe_2.

84. The method of claim 83, wherein R^3, R^4, and R^6-R^9 are hydrogen.

85. The method of claim 78, wherein R^6 is an alkyl substituted amino group.

86. The method of claim 78, wherein R^6 is NMe_2.

87. The method of claim 86, wherein R^3-R^5 and R^7-R^9 are hydrogen.

88. The method of claim 64, wherein Y is N and Y is CR^1.

89. The method of claim 88, wherein R^3 is $B(OH)_2$.

90. The method of claim 89, wherein R^4-R^9 are hydrogen.

91. The method of claim 88, wherein R^4 is $B(OH)_2$.

92. The method of claim 91, wherein R^1, R^3, and R^5-R^8 are hydrogen.

93. The method of claim 88, wherein R^5 is $B(OH)_2$.

94. The method of claim 93, wherein R^3, R^4, and R^6-R^9 are hydrogen.

95. The method of claim 88, wherein R^6 is $B(OH)_2$.

96. The method of claim 95, wherein R^3-R^5 and R^7-R^9 are hydrogen.

97. The method of claim 88, wherein R^7 is $B(OH)_2$.

98. The method of claim 97, wherein R^3-R^6, R^8, and R^9 are hydrogen.

99. The method of claim 88, wherein R^8 is $B(OH)_2$.

100. The method of claim 99, wherein R^3-R^7 and R^9 are hydrogen.

101. The method of claim 88, wherein at least one R^3-R^9 group is COOH.

102. The method of claim 101, wherein at least one R^3-R^9 group is Z-$B(OH)_2$, where Z is an aryl group.

103. The method of claim 102, wherein Z is a substituted or unbsubstituted phenyl ring.

104. The method of claim 88, wherein R^4 is COOH and R^1 is *p*-phenyl-$B(OH)_2$.

105. The modified-macromolecule of claim 104, wherein R^3 and R^5-R^9 are hydrogen.

106. The method of claim 105, wherein Y is not present.

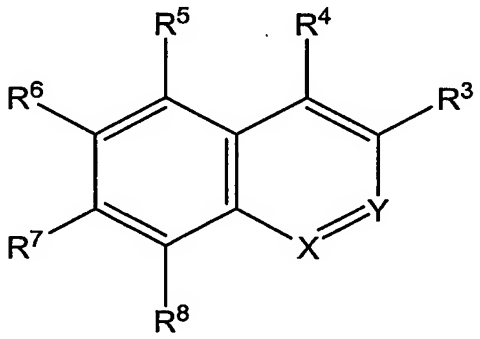
107. The method of claim 106, wherein X is sulfur.

108. The method of claim 107, wherein R^3 is $B(OH)_2$.

109. The method of claim 108, wherein R^4-R^8 are hydrogen.

110. An article comprising the modified macromolecule of claim 27.

111. An article comprising the compound having the formula II



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group, a hydroxyl group, an alkoxy group, a COOH group, a $B(OH)_2$ group, an alkyl substituted amino group, an amino group, a hydroxyalkyl group, an alkoxyalkyl group, an aminoalkyl group, a thiol group, a thiol ether group, an amide group, an aldehyde group, a ketone group, an ester, an arakyl group, an aryl group, a nitrile group, a nitro, a halogen, a sulfo-oxo group, a sulfo-amide group, a phosphonate group, or a phosphate;

wherein the compound having the formula II has at least one $B(OH)_2$ group directly or indirectly bonded to the ring;

or the salt thereof.

112. The article of claims 110 or 111, wherein the article comprises a sensor chip or microplate.